# We've Seen the Future: It's in Iowa

## **Technology:** A state that is really wired


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WITH A CLEAN SWEEP OF HIS ARM, Matt Nelson, 19, pulls the bow across his cello in a classroom in Waverly, Iowa. His instructor, John Ehrlich, responds with the authority that comes from 50 years of teaching. "You were flat across the neck," he says softly. Nelson nods, seemingly oblivious to the fact that Ehrlich is 120 miles away in Des Moines, and speaking to him from a large monitor.

Dr. Steven Karber, an internist at Greene County Medical Center in Jefferson, Iowa, examines a heart patient, a tall, thin man in his 60s, while two cardiologists 70 miles away at the Iowa Methodist Medical Center in Des Moines check out the patient's electronically transmitted echocardiogram and X-rays. Everything looks OK. For rural medicine, says David Decker, chief of staff at Greene County, "this is the best thing that's happened in a long time."

From a public-television studio in Johnston, Judge James Twedt, Iowa's senior administrative parole judge, presides over a case. The parolee, wearing an orange prison jumpsuit, is 170 miles away in Elkader, facing the judge on a monitor. "Ten years ago I traveled 2,500 miles a month . . . for my work," the judge explains. "Now I don't have to put in all that windshield time. I'm able to see the parolees almost as well as if they were here."

This isn't techie heaven; it's Iowa. Although other states—including North Carolina, Georgia and Maryland—are experimenting with fiber-optic networks, Iowa is the first to have all of its counties hooked up through a fiber-optics communications system that many experts say could be a national model. Visitors from as far away as Japan have come to check out how the Iowa Communications Network (ICN) has transformed the state's schools, hospitals and criminal-justice system. "Soon the network will be as much a part of the Iowa landscape as the grain elevator," says Ted Chapler, the ICN's former chief executive director.

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Iowans latched onto the concept of a network early. In the late 1970s, high schools in rural southeast Iowa formed a consortium to construct an interactive microwave system providing two-way video and audio links between their school districts. In 1980, the state started developing an integrated telecommunications system that used microwave and cable technology. With that in place, Iowa lawmakers were receptive to passing a bill creating the ICN in 1989. The network converts voice, video and data signals into digital light impulses that are transmitted over hair-thin glass fibers. So far, the ICN includes 105 schools and colleges, three prisons, an armory, and three hospitals. Total cost of the state-owned network: $97.5 million. The next stage, scheduled to start in 1995, is expected to bring online hundreds more schools, libraries and state agencies.

So far, the most impressive results have been in the state's schools. From a classroom in Marshalltown, Russian teacher Mark Engle presides over three high-school classes with students in Marhalltown and rural Spirit Lake, 200 miles away. Generally, says Engle, the joint classes have been successful, although a few students resist high-tech teaching. "The 17- and 18-year-olds didn't like sharing me," he says. "But those who hadn't experienced the prenetwork teaching adjusted really well." While Engle is the head teacher in the joint class, there's an attending teacher in Spirit Lake as well, just to make sure that the kids understand what's happening. "There's still nothing like the warm body of a teacher, someone who can touch the student on the shoulder," says Linda Fanning, a student teacher who assists Engle.

At this point, the network's biggest problem is its success. Demand has grown so rapidly that some users have trouble getting access. Construction of the next phase should help. Phil Smith, director of the office for state-federal relations in Iowa, has spent the last three years studying telecommunications in the state. He thinks people need to be taught how to take full advantage of the network. "Teachers must be specially trained," he says, "or they'll end up teaching the same way they have for the last 30 years—but in front of a camera." There are also lots of unresolved issues, he says. "In the field of telemedicine, telepathology, teleradiology, the access of rural providers to urban expertise—all those things are going to change medicine. But who's going to pay for what? And how are we going to deal with the liability issues? Or the issues of privacy?" We have seen the future—and it's in Des Moines.

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